UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,065	05/07/2001	Thierry Cruanes	50277-1522	2871

			EXAMINER
29989	7590	05/19/2004	BANANKHAH, MAJID A

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ART UNIT	PAPER NUMBER
2127	

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *07 May 2001*.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-24* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-24* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All   b) ☐ Some * c) ☐ None of:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____.
   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1.   This office action is in response to application filed on May 07, 2001. Claims 1-24 are

considered for examination.

Claim Rejections - 35 USC § 103

2.   Following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zait et al.

(U.S.Pat. No. 6,665,684, hereinafter Zait) in view of Baru (U.S.Pat. No. 5,878,409, hereinafter

Baru).

Per claims1, 11, 21, and 23, a method for performing parallel operations on a pair of objects in a
system that includes a plurality of nodes to enable using an increased degree of parallelism (Zait
reference, U.S., Pat. No. 6,665,684), the method comprising the computer-implemented steps of:

distributing first-phase partition-pairs of a parallel partition-wise (see Zait, col. Multi

Dimensional partitioning, composite partitioning, col. 3, lines 25-45, and col. 4, lines 51-57, firs

level partition) operation on the pair of objects among the plurality of nodes (col. 6, lines 5-15,

and lines 18-30); at a particular node of said plurality of nodes (col. 6, lines 18-30, different

nodes), performing the steps of: partitioning the one or more first-phase partition-pairs

distributed to the particular node to produce a set of second-phase partition-pairs (col. Second

level partitioning, col. ; and assigning each second-phase partition-pair from the set of

second-phase partition-pairs to a slave process (col. 8, lines 31-47).

While the reference of Zait teaches of assigning the partitions of the object as the subsets of data

for distribution to **slave processes** (Zait, col. 8, lines 48-55), he fails to teach assigning to

separate slave process. However, the reference of Baru in the same field of endeavor teaches of a

system wherein the data of the partitioned table are distributed across a subset of the nodes in

accordance with the partitioning arrangement in order for the database to be more controllable by

controlling the number of nodes on which a table is stored (see, Baru, Abstract, and col. 3, lines

57 to col. 4, lines 7, and col. 5, lines 9-41). Therefore, it would have been obvious for a person

ordinary skill in the art at the time the invention was made to modify Zait's invention by Baru,

assignment method, i.e. assign partition pars to separate slave processes in order to increase

efficiency by avoiding congestion and increasing parallelism.

Regarding the mapping of each duple from a source object to a corresponding static partition in

claims 21 and 23, see Baru in col. 5, lines 61 to col. 6, line 6.

Per claims 2 and 12, the claims are rejected for the reason stated in the rejection of claim 1 and

further, wherein the step of assigning each second-phase partition-pair from the set of

second-phase partition-pairs to a separate slave process is performed by assigning each

second-phase; partition-pair from the set of second-phase partition pairs to a separate slave

process within said particular node (See Baru, col. 3, lines 7-20).

Per claims 3 and 13, the claims are rejected for the reason stated in the rejection of claim 1 and

further, wherein the parallel partition-wise operation is a parallel full partition-wise operation

(see Zait, col. Multi Dimensional partitioning, composite partitioning, col. 3, lines 25-45, and

col. 4, lines 51-57, firs level partition).

Per claims 4 and 14, the claim is rejected for the reason stated in the rejection of claim 1 and further, wherein the parallel partition-wise operation is a parallel partial partition-wise operation (Multi Dimensional partitioning, composite partitioning).

Per claims 5 and 15, the claims are rejected for the reason stated in the rejection of claim 1 and further, wherein the step of partitioning the one or more first-phase partition-pairs and the step of assigning second-phase partition-pairs are performed at each node that has multiple slave processes available for participating in said parallel partition-wise operation. The system of Zait teaches of multiple salve processes in col. 8, lines 39-55).

Per claims 6 and 16, the claims are rejected for the reason stated in the rejection of claim 1 and further, further comprising the steps of determining whether a total number of slave processes available for participating in a second parallel partition-wise operation has a particular logical relationship to a number of first-phase partition-pairs of the second parallel partition-wise operation; if the total number of slave processes available for participating in the second parallel partition-wise operation has said particular logical relationship to the number of first-phase partition-pairs of the second parallel partition-wise operation (see Zait, col. 10, lines 16-38), then at said particular node performing the steps of:

partitioning the one or more first-phase partition-pairs distributed to the particular node for the second parallel partition-wise operation to produce a set of second-phase partition-pairs; and

assigning the second-phase partition-pairs from the set of second-phase partition-pairs to slave processes within the particular node to cause the number of slave processes participating in said second parallel partition-wise operation on said particular node to be greater than the number of first-phase partition-pairs that were distributed to said particular node (Zait, col. 10, lines 54 to col. 11, line 3);

if the total number of slave processes available for participating in the second parallel partition-wise operation does not have the particular logical relationship to the number of first-phase partition-pairs of the second parallel partition-wise operation, then distributing said first-phase partition-pairs to slave processes without performing second-phase partitioning (col. 11, lines 15-36).

Per claims 7 and 17, the claims are rejected for the reason stated in the rejection of claim 6 and further, wherein the step of partitioning the one or more first-phase partition-pairs and the step of assigning the second-phase partition-pairs are performed at each node that has more slave processes available for participating in said second parallel partition-wise operation than the number of first-phase partition pairs that are distributed to the node (col. 11, lines 15-18).

Per claims 8 and 18, the claims are rejected for the reason stated in the rejection of claim 6 and further,
wherein the total number of slave processes available for participating in the second parallel partition-wise operation has the particular logical relationship to the number of first-phase

partition-pairs of the second parallel partition-wise operation if the total number of slave

processes available for participating in the second parallel partition-wise operation is greater than

the number of first-phase partition-pairs of the second parallel partition-wise operation (col. 11,

lines 57 to col. 12, line 32).

Per claims 9 and 19, the claims are rejected for the reason stated in the rejection of claim 6 and

further,, wherein the total number of slave processes available for participating in the second

parallel partition-wise operation has the particular logical relationship to the number of

first-phase partition-pairs of the second parallel partition-wise operation if the total number of

slave processes available for participating in the second parallel partition-wise operation is at

least an order of magnitude greater than the number of first-phase partition-pairs of the second

parallel partition-wise operation (Zait, col. 10, lines 54 to col. 11, line 3).

Per claims 10 and 20, the claims are rejected for the reason stated in the rejection of claim 1 and

further, wherein the step of distributing first-phase partition pairs is performed based, at least in

part, on node affinity with respect to the one or more first has partition-pairs of the parallel

partition-wise operation and availability of slave processes for performing the parallel

partition-wise operation (Zait, col. 8, lines 48-55).

Per claims 22, and 24, the claims are rejected for the reasons stated in the rejection of claims 21,

and 23 and further, wherein the node distribution criteria includes node affinity

with respect to the one or more first-phase partition-pairs of the parallel partition-wise

operation and availability of slave processes for performing the parallel partition-wise operation. It is well known in the art that affinity is the relationship among data processing elements where there is an inherent likeness or agreement. In this instant situation it would have been more desirable to process the data on the slave process where there is existing data from previous partitioning in there.

4.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Majid A. Banankhah** whose voice telephone number is **(703) 308-6903**. A voice mail service is also available at this number.

All response sent to U.S. Mail should be mailed to:

Commissioner of Patent and Trademarks

Washington, D.C. 20231

Hand-delivered responses should be brought to Crystal Park Two, 2021 Crystal Drive, Arlington. VA, Six Floor (Receptionist). All hand-delivered responses will be handled and entered by the docketing personnel. Please do not hand deliver responses to the Examiner.

All Formal or Official Faxes must be signed and sent to either (703) 308-9051 or (703) 308-9052. Official faxes will be handled and entered by the docketing personnel. The date of entry will correspond to the actual FAX reception date unless that date is a Saturday, Sunday, or a Federal Holiday within the District of Columbia, in which case the official date of receipt

will be the next business day. The application file will be promptly forwarded to the Examiner

unless the application file must be sent to another area of the office, e.g., Finance Division for

fee charging, etc.

     Any inquiry of a general nature or relating to the status of this application should be

directed to the Group receptionist whose telephone number is **(703) 305-9600**.

Maid Banankhah

5/17/04

MAJID BANANKHAH
PRIMARY EXAMINER